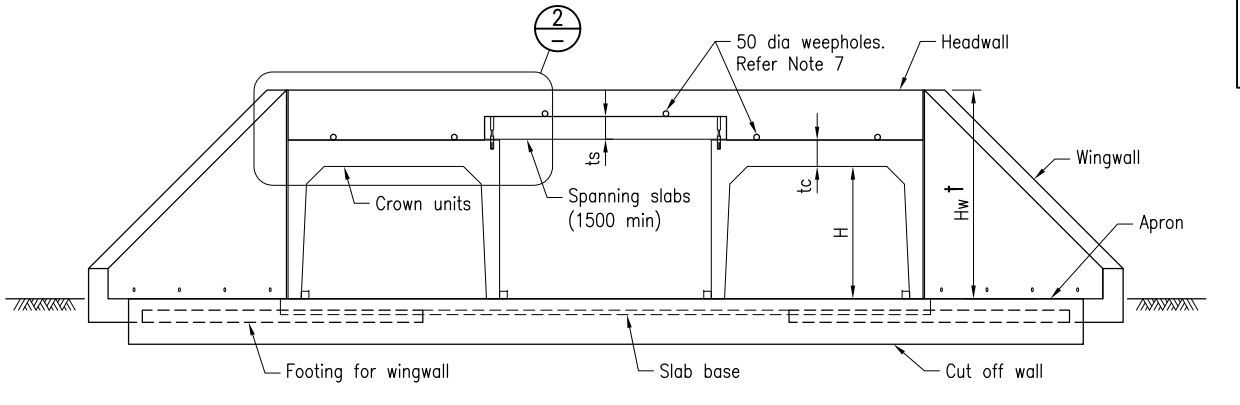
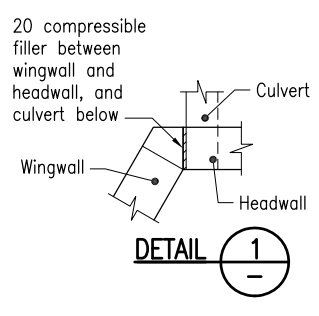


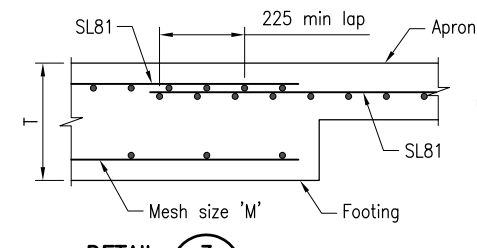
PLAN



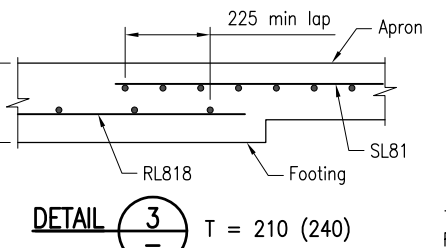
ELEVATION
MULTIPLE CELL CULVERT



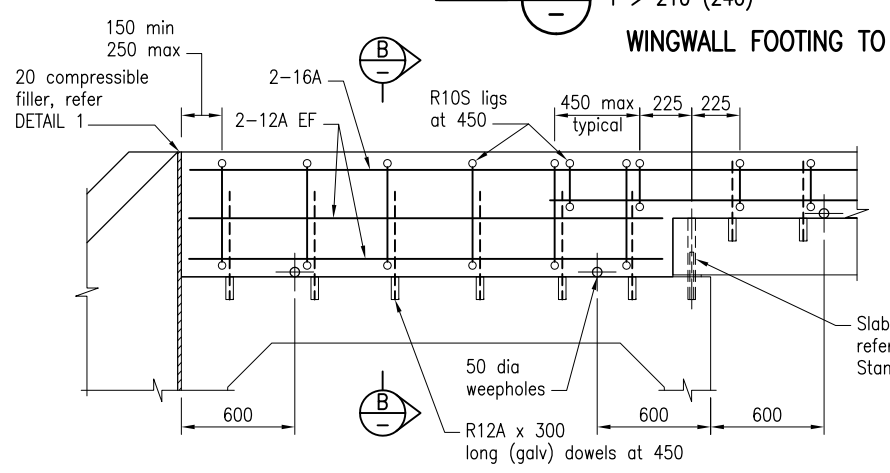
DETAIL 1



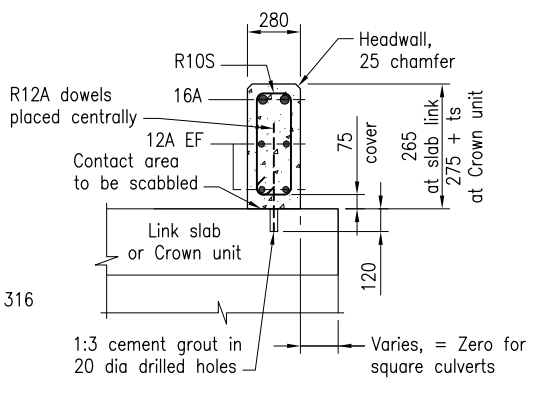
DETAIL 3 T > 210 (240)



DETAIL 3 T = 210 (240)



DETAIL 2 HEADWALL DETAILS

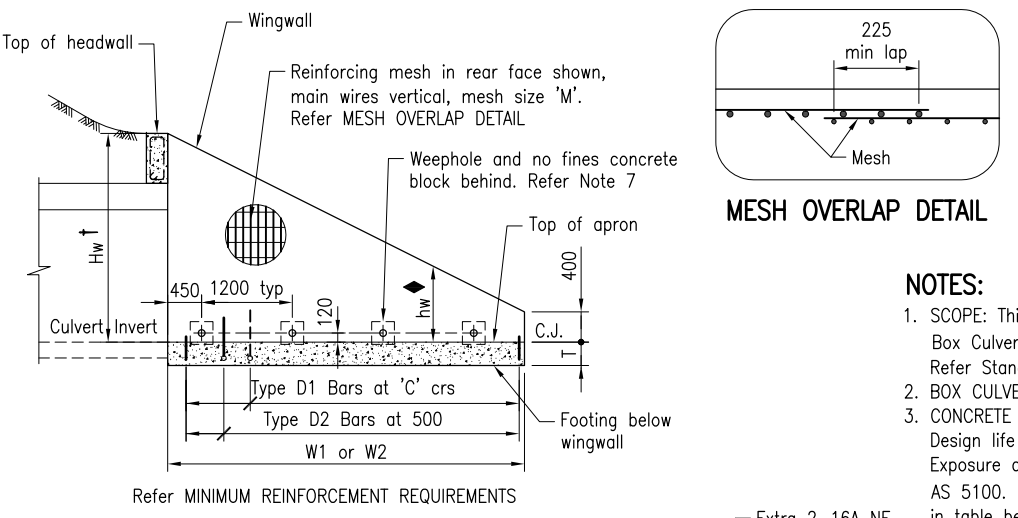


SECTION B HEADWALL DETAILS

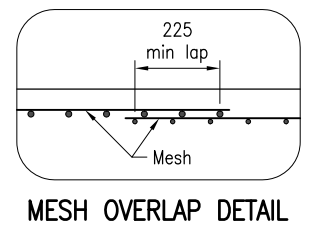
WINGWALL DIMENSIONS

up to Hw ↑	F	T
1000	0.75 Hw	210 (240)
1500		210 (240)
2000		260 (290)
2500		310 (340)
3000		310 (340)
3700		360 (390)
4350		360 (390)

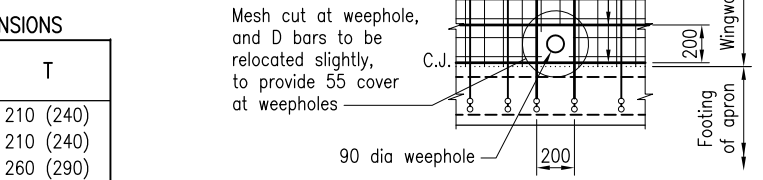
↑ where Hw = H + tc + ts + 250
height of opening, H,
thickness of culvert, tc,
thickness of slab, ts



SECTION X ELEVATION AT WINGWALL



MESH OVERLAP DETAIL



ELEVATION AT WEEP HOLE

MINIMUM REINFORCEMENT REQUIREMENTS (Refer Note 4)

hw	M	Type D1 Bars			12 dia Type D2 Bars	
		dia	A	B	C	E
400 - 1000	RL818	12	550	400	200	450
1000 - 1500	RL818	12	550	400	200	550
1500 - 2000	RL1018	12	600	400	100	600
2000 - 2500	RL1018	12	650	400	100	650
2500 - 3000	RL1218	20	750	500	100	650
3000 - 3700	RL1218	20	1000	1000	100	700
3700 - 4350	RL1218	20	1800	1800	100	700

MINIMUM REINFORCEMENT REQUIREMENTS (Refer Note 4)

WINGWALL AND FOOTING REINFORCEMENT DETAILS

SECTION A WINGWALL AND FOOTING REINFORCEMENT DETAILS

NOTES:

- SCOPE: This drawing is to detail cast insitu headwalls and wingwalls for precast RC Box Culverts and Slab Link Box Culverts where H (height of opening) > 600. Refer Standard Drawing 1317 and 1318 for slab base and apron details.
- BOX CULVERT END STRUCTURES shall be in accordance with MRTS03.
- CONCRETE shall be in accordance with MRTS70. Design life 100 years. Exposure classification and cover to reinforcement shall be in accordance with AS 5100. Minimum concrete strength and cover to reinforcement shall be as shown in table below.

Exposure classification	minimum B2	C ↑
Minimum concrete strength	S40/20	S50/20
Minimum Cover UNO	55	70

↑ Dimensions within brackets () are for exposure classification C. Blinding concrete N20/20.
- REINFORCING STEEL to be read in conjunction with Standard Drawings 1043 and 1044. Reinforcing steel to be in accordance with MRTS71 and AS/NZS 4671. Deformed bars Grade D500N, Round bars Grade R250N and reinforcing mesh Grade D500L. Reinforcement to be hot dip galvanised to AS/NZS 4680 where shown.
- TACK WELDING to reinforcement for location purposes to AS/NZS 1554.3. Welding consumables to be controlled hydrogen type: G49X to AS/NZS ISO 14341-B or T49X to AS/NZS ISO 17632-B.
- WINGWALLS for skewed culverts with angle greater than 45 require project-specific design.
- WEEPHOLES shall be provided horizontally as follows:
 - Wingwalls and abutment walls, at 1200 crs,
 - Headwalls, a minimum of 2 weepholes for each culvert crown or link slab,
 - Location of weepholes shall be determined such that reinforcement cover requirements are met,
 - A 300 x 300 x 150 no fines concrete block or approved equivalent shall be provided at each weep hole as a drainage filter.
- Refer Standard Drawing 1359 for details of earthworks to culverts.
- PROJECT-SPECIFIC INFORMATION to be shown on the drawings: Exposure classification; Culvert chainage; Skew angle; Base and apron setout and extents; Headwall and wingwall extents; Steel schedule.
- DIMENSIONS are in millimetres unless shown otherwise.

ASSOCIATED DEPARTMENTAL DOCUMENTS:
Design Criteria for Bridges and Other Structures
NDRRA Guidelines
Road Drainage Manual (RDM)

REFERENCED DOCUMENTS:
Departmental Standard Drawings:
1043 Reinforcing Steel - Standard Bar Shapes
1044 Reinforcing Steel - Lap Lengths
1316 RC Box Culverts and Slab Link Box Culverts - General Arrangement and Installation of Precast Units Height > 600
1317 RC Box Culverts and Slab Link Box Culverts - Construction of Bases and Aprons with Nibs (All Sizes)
1318 RC Box Culverts and Slab Link Box Culverts - Construction of Bases and Aprons with Recesses (All Sizes)

Departmental Specifications:
MRTS03 Drainage, Retaining Structures and Protective Treatments
MRTS70 Concrete
MRTS71 Reinforcing Steel

Department of Transport and Main Roads			
R C BOX CULVERTS AND SLAB LINK BOX CULVERTS			
CONSTRUCTION OF HEADWALLS AND WINGWALLS HEIGHT > 600		A3	Standard Drawing No
		Not to Scale	1303
			Date 7/17